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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/601,226	10/11/2000	Wolfgang Bohrer	67190/983053	8560

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EXAMINER	
LAM, DANIEL K	

ART UNIT	PAPER NUMBER
2667	//

DATE MAILED: 06/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/601,226	BOHRER ET AL.	
	Examiner	Art Unit	
	Daniel K Lam	2667	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *21 April 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *11-17,19 and 21* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *11-17,19 and 21* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10/11/2000* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Applicant's amendment filed on 21 April 2004 has been fully considered. In view of new interpretation of the claim languages and the prior art of record:

- Original claim 16, which was previously objected to, is now being rejected.
- Amended independent claim 17, which incorporates the limitations of claims 18 and 20, is now rejected.

The rejection reasons are:

- Claim 16 recites the limitation of *addressing and supplying of the container messages is carried out in accordance with an increasing subaddress part* is shown in the prior art of record.
- Claim 17 recites the limitation of *the programmable microchip is provided as a programmable gate array* is shown in the prior art of record.

Drawings

2. The drawings are objected to because **figures 1, 2 and 5 are missing descriptive names**. Corrected drawing sheets are required in reply to the Office action to avoid abandonment of the application. Any amended replacement-drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be

notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. **Claims 11-16 and 21** are remain rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 4,982,185 issued to Holmberg et al (hereinafter Holmberg) in view of U. S. Pat. No. 4,847,613 issued to Sakurai et al (hereinafter Sakurai).

Regarding **amended claim 11**, Holmberg discloses a method for communication among equal-access stations of a ring-shaped network, comprising:

a) During one bus cycle, a predetermined one of the stations (*see fig. 1, an operator can interact with a node via the operator's interface 21 or 36*) generating strictly time-cyclical container messages, and supplying the container messages to the bus, the predetermined one of the stations supplying a synchronization message to the bus as an end message of the bus cycle (see fig. 1 reference 11, MASTER NODE, and col. 2, lines 32 to 58).

The master node 11 sends synchronization message 60 (see fig. 2C) to each slave nodes 12 (see col. 4, lines 51-52) such that each slave can determine its delay period

so that it can maintain precise operation synchronization among the slave nodes 12 (see col. 5, lines 2-6).

b) Each one of the stations writing respective data in the container messages addressed to the one of the stations (see fig. 2D reference 70, DATA TRANSFER MESSAGE, and col. 5, lines 17 to 35).

c) Each one of the stations reading data of written-in container messages on the serial bus as a function of a read authorization of the one of the stations (see fig. 2B reference 50, DOWNLOAD NETWORK PARAMETERS MESSAGE, and col. 4, lines 31 to 46).

d) Each one of the stations reading the synchronization message and generating a respective interrupt as a function of the synchronization message, wherein depending on a respective position of each one of the stations, the respective interrupt being time delayed so that all of the respective interrupts are output in a time-synchronous manner (see fig. 2C reference 60, SYNCHRONIZING MESSAGE, and col. 4, lines 51 to 59).

e) Further processing the read data when the respective interrupts are output (see col. 4, lines 59-63).

f) Each one of the stations communicating only with the bus, due to the source addressing of the written respective data and each one of the stations having direct-access read authorization of the respective data written by each one of the stations (see fig. 1 references 23, 24, 32 and 35, OPTO-ISOLATOR, and col. 3, lines 18-26, 29-33, and 42-46).

However, Holmberg does not disclose the limitations of serial fiber-optic bus and addressing the container messages.

Sakurai discloses an apparatus using optical fiber to form a serial loop shaped bus (see fig. 10 reference 6, and col. 1, lines 34 to 42) and addressed the container messages (see fig. 2 reference AI, Address Information, and col. 6, lines 41 to 46).

Therefore, it would have been obvious to those having ordinary skill in the art to deploy optical fiber connecting each individual station serially and address each station in the container message for couple of reasons. Firstly, serially optical fiber can reduce the number of wiring needed to connect each station and optical fiber has high noise immunity since there are many noises at the vicinity of the automatic machine as taught by Sakurai (see col. 1, lines 24 to 33). Secondly, having a unique address in the container message, information can be transferred to each station individually also taught by Sakurai (see col. 6, lines 41 to 46).

Regarding **claim 12**, in addition to disclose the limitations regarding claim 11 in the previous paragraph, Holmberg further discloses the time delay is depended on the number of the nodes and the network addresses of the nodes (according to the equation, $t(vz, n) = [N - (n - 1)] * 3B$). See col. 4, line 64 to col. 5, line 16.

Regarding **claims 13 and 14**, in addition to disclose the limitations regarding claim 11 in the previous paragraph, Holmberg further discloses the serial bus addressed blank messages following a last addressed container message and outputting special messages for filling up the bus cycle between the last generated addressed message and the synchronization message (see col. 5, lines 47 to 57).

Regarding **claims 15 and 16**, in addition to disclose the limitations regarding claim 14 in the previous paragraph, Holmberg further discloses when each slave node receives the auto-address message 40, it increments the value (the addressing and supplying of the container messages is carried out in accordance with an increasing address part (claim 15) and subaddress part (claim 16). See col. 4 lines 5 to 16.

Regarding **claim 21 (new)**, Sakurai discloses a device for providing communication among equal access stations of a ring-shaped, serial fiber-optic bus, comprising:

a) A conventional optical remote I/O system (a respective interface module at each of the stations). See fig. 11, and col. 1 lines 52 to 53.

b) Opto-electric converters 8 and connecting the remote I/O system to its up down streams stations (two respective bus connector sockets at each of the stations, each respective interface module being connected to the serial bus via the two respective bus connector sockets). See fig. 11, and col. 2, lines 54 to 62.

c) One of the stations is a master station controller 5. The others are sub-stations (one of the stations is parameterized as a dispatcher station, and others of the stations being parameterized as transceiver stations, the dispatcher station including a list of all messages to be transmitted, and each of the transceiver stations having a read authorization which allows reading of data written in the transmitted messages by each of the transceiver stations). See fig. 10, and col. 1, lines 34 to 42.

5. **Claims 17 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Pat. No. 4,847,613 issued to Sakurai et al (hereinafter Sakurai) in view of U. S. Pat. No. 5,941,966 issued to Gotze et al (hereinafter Gotze).

Regarding **amended claim 17**, Sakurai discloses a device for providing communication among equal access stations of a ring-shaped, serial fiber-optic bus, comprising:

d) A conventional optical remote I/O system (a respective interface module at each of the stations). See fig. 11, and col. 1 lines 52 to 53.

e) Opto-electric converters 8 and connecting the remote I/O system to its up down streams stations (two respective bus connector sockets at each of the stations, each respective interface module being connected to the serial bus via the two respective bus connector sockets). See fig. 11, and col. 2, lines 54 to 62.

f) One of the stations is a master station controller 5. The others are sub-stations (one of the stations is parameterized as a dispatcher station, and others of the stations being parameterized as transceiver stations, the dispatcher station including a list of all messages to be transmitted, and each of the transceiver stations having a read authorization). See fig. 10, and col. 1, lines 34 to 42.

However, he does not disclose:

g) Each interface module includes a programmable microchip having an associated erasable read-only memory, a read-write memory, and a clock generator, each respective interface module including a system connector, and a voltage source, each of the respective bus connector sockets being linked to the programmable microchip

by the converter, the programmable microchip being connected to the system connector via signal lines.

h) The programmable microchip is provided as a programmable gate array.

Gotze discloses a device includes *microcontroller 500 (programmable microchip as a programmable gate array)*, ROM 550 (erasable read-only memory), memory 530 (read-write memory), clock CLK 560 (clock), and OTHER 520 (a voltage source). See fig. 4. Connections, such as, RS 232 515, ABUS CAN 510, and OTHER, are connected to the microcontroller 500 (each of the respective bus connector sockets is linked to the programmable microchip by the converter, the programmable microchip being connected to the system connector via signal lines). See fig. 4, and col. 5, lines 27 to 38. Therefore, it would have been obvious to those having ordinary skill in the art to design a station with interface module, bus connector sockets, one station as dispatch station, other stations are transceiver stations, and the interface module includes a programmable microchip, connector, and opto-electrical converters, for a key reason. Having a station with interface module, programmable microchip, RAM, EROM, opto-electrical converters, system connector, bus connectors, etc, the interface module can be used in different type of data buses and environments. Hence, the cost of manufacturing the station can be reduced. See col. 2, lines 22 to 33 of Gotze.

Regarding **claim 19**, in addition to disclose the limitations regarding claim 17 in the previous paragraph, the interface module includes light-emitting diodes for status display (see fig. 4, references 570 and LCD, and col. 5, lines 34-36).

Response to Arguments

6. Regarding the remark (see page 7, paragraph 3) concerning about in direct contract to Holmberg disclosing a conventional master/slave communication system which consists on a master and plural slaves, wherein data can be transmitted from a master to slaves, and from slaves to the master, but no data be actively transmitted between the slaves. On the hand, Holmberg also discloses that an operator can interact with a node via the operator's interface 21 or 36 (see fig. 1). By using auto-address mechanism, the master node is assigned a zero address value. Therefore, it is obvious that any node may be a master node by having zero address value since the operator can interact with any node in the network via the operator's interface (see col. 4, lines 5-16). Also see *italicized lines* in claim 11.

7. Regarding another remark (see page 7, paragraph 4) concerning about Holmberg does not disclose "generating strictly time-cyclical container messages" as recited in amended claim 11. Holmberg discloses that the master node 11 sends synchronization message 60 (see fig. 2C) to each slave nodes 12 (see col. 4, lines 51-52) such that each slave can determine its delay period so that it can maintain precise operation synchronization among the slave nodes 12 (see col. 5, lines 2-6). Also see the *italicized lines* in claim 11.

Contact Information

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel K. Lam whose telephone number is (703)

305-8605. The examiner can normally be reached on Monday-Friday from 8:30 AM to 4:30 PM.

If attempt to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi Pham can be reached on (703) 305-4378. The fax phone number for this Group is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-4700.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status Information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DKL dkl
June 22, 2004

CHI PHAM
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600 6/24/04